REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested in view of the foregoing amendments and the following remarks. Claims 1-70 are currently pending. Claims 1-29 and 64-70 correspond to the species elected in response to previous election requirements. Claims 30-63 have been withdrawn from consideration. Claims 1, 12 and 17 are amended. No new matter is added.

Claims 1 and 17 are amended to include a limitation of cooling steps comprising placing food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit. Support for these amendments is found, inter alia, in the description of the application in paragraphs [0009], [0010], and [0034]. Claim 12 is amended as to form.

Claim Rejections under 35 U.S.C. § 102

Claims 1-9, 11-13, 17-29 and 67 were rejected under 35 U.S.C. § 102(b) as being anticipated by Narumiya et al. (US 6,217,928). Applicant respectfully traverses this rejection for reasons that follow.

Claim 1, as amended, claims a method of freezing food for later thawing and use, having steps of packing the food product in a sealed container for freezing, cooling the food substantially throughout the bulk thereof to approximately 10°C to 0°C in approximately 1 to 10 minutes, and cooling the food substantially throughout the bulk thereof to approximately 0°C to -10°C in approximately 10 to 40 minutes; wherein the cooling steps include placing the food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit.

Claim 17, as amended, claims a method of freezing food including steps of packaging the food to be frozen after a temperature of said food product reaches a first predetermined

temperature; cooling the food until the temperature of the food reaches a second predetermined temperature; and cooling the food so that the temperature of the food decreases from said second predetermined temperature to a third predetermined temperature within a first predetermined period of time; wherein the cooling steps include placing the food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit.

Narumiya, which relates to a process of freezing sushi, boiled rice, or processed food with boiled rice as the main component, fails to disclose the claimed invention. For example, Narumiya fails to disclose or suggest the cooling steps which include placing the food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit as presently recited in amended claims 1 and 17. This limitation -- nowhere disclosed or suggested by Narumiya -- provides a significant advantage over the prior art in that it provides very rapid calorie exchange, via a solid to gas phase change, thereby providing optimal freezing conditions. Therefore, Applicant respectfully submits that the subject matter of independent claims 1 and 17 and dependent claims 2-9, 11-13, 18-29, and 67 are allowable and that the rejection should be withdrawn.

Dependent claim 9, which recites that the food product is sushi, is allowable over Narumiya for the independent reason that Narumiya fails to disclose a step of packaging sushi prior to cooling. Contrary to the implication in the Office Action that Narumiya discloses pre-freezing packaging of sushi, Narumiya explicitly states that "[a]side from sushi, boiled rice or processed food with boiled rice as its main component, for instance onigiri, may be frozen in a similar process. More specifically, boiled rice or the like is disposed in a non-packed or packed state in a freezer, and then freezing is started." Col. 6, ll. 59-63 (emphasis added). In sum, Narumiya teaches that foods aside from sushi may be disposed in a packed state in a freezer.

Thus, Applicant requests that the rejection of claim 9 be withdrawn for this additional independent reason.

Claim Rejections under 35 U.S.C. § 103

Claims 14 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumiya in view of Grewar (US 4,325,221). Applicant respectfully traverses this rejection for reasons that follow.

Claims 14 and 16 depend on amended claim 1 through intermediate claims. As noted above, Narumiya fails to disclose, inter alia, cooling steps which include placing the food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit as presently recited in amended claim 1 (and therefore a required limitation of claims 14 and 16). Grewar, which discloses a method of freezing an animal carcass by spraying it with liquid nitrogen or liquid carbon dioxide, does not remedy this deficiency of Narumiya. Accordingly, claims 14 and 16 are allowable and withdrawal of the rejection is respectfully requested.

Claims 14 and 16 are allowable over the combination of Narumiya and Grewar for the independent reason that a person of ordinary skill in the art would not combine Grewar with Narumiya. Grewar teaches a flash freezing technique in which "the carcass will be subjected to direct contact with a cryogenic liquid and the cold gas evolved therefrom. The amount of cryogenic liquid directed at the carcass is sufficient temporarily to freeze and thus seal the surface membranes to prevent the egress of moisture from the carcass." Col. 3 ll. 7-12. Narumiya teaches away from the flash freezing technique of Grewar, criticizing a process including "blowing liquified gas against the rice" by stating, "[i]n either of the above techniques, a significant problem is posed by the quick freezing sushi ... the rice ball part as shown in FIG. 3, does not always provide for good taste, and the quality of food is extremely deteriorated

compared to non-frozen sushi." Col. 3, ll. 4-5, 22-31. Thus, Narumiya teaches away from techniques such as those disclosed by Grewar and claims 14 and 16 are allowable for this independent reason. Applicant therefore respectfully requests that the rejection be withdrawn.

Claim 15 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumiya in view of Lamb (US 4,399,667). Applicant respectfully traverses this rejection for at least the reasons that follow. Claim 15 depends on allowable claim 1 through intermediate claim 12. Because Lamb does not correct the deficiencies of Narumiya, discussed above, claim 15 is allowable at least for the reason of its dependency upon allowable claim 1.

Furthermore, claim 15 is allowable over the combination of Narumiya and Lamb for the independent reason that the combination does not disclose "controlling an incident angle between dry ice in said freezer and a circulation of air within said freezer" in the context of "adjusting said variable cooling feature" as recited. Lamb, which relates to an apparatus for keeping aircraft meals chilled, discloses that fans are "positioned at an angle." Additionally, Lamb does not make controlling an incident angle obvious. The Office Action states that "Lamb discloses importance of directing air at specific angle, and thus it would have been obvious to control an incident angle between dry ice in freezer and a circulation of air within the freezer to enhance the efficiency of heat transfer as taught by Lamb et al." However, nothing in Lamb teaches, suggests, or motivates one to control an incident angle as contended by the Office Action or recited in the claim. Lamb merely teaches:

> As can be seen from the preceding description, the construction of the chiller bunker 42, with its channels 66, greatly enhances the efficiency of heat transfer since the downwardly moving cold CO_2 gas can be readily picked up by the circulating air stream from the fan 24. The fan 24, by being positioned at an angle, not only helps direct air into the channels 66 and under the dry ice 70, but is well protected from damage by the careless use of high pressure steam or hot water hoses used to clean the cart. The

> bunker 42 requires only the vertical space of one food tray. The angled fan mounting requires little or no increase in the height of the cart compared to one having a fan mounted on the same level as the bunker since it is desirable for the cart to have the recessed dry sink 20 which requires the raised portion 22. A further advantage of the top mounted fan is that it permits the bunker 42 to be loaded in the cart from whichever end is more convenient. A suitable mounting angle for the fan or blower 24 is about 30° relative to the horizontal. This angle insures that most of the air will be directed lengthwise of the bunker, but that some of it will also get directed under the dry ice. The entire bunker is very light in weight due to its being formed of thin plastic sheets which are bonded to each other by solvents, heat, or other conventional techniques.

In sum, Lamb teaches that the fan angle helps to direct air into channels and under the dry ice. That is, the fan mounting angle and control of the fan angle relative to the dry ice is irrelevant so long as air flows lengthwise and under the dry ice. The angle selected by Lamb facilitates a shorter cart, high-pressure steam cleaning, and either-end loading. Thus, there is no teaching, suggestion or motivation to control the incident angle of air flow in Lamb, much less, in the context of "adjusting said variable cooling feature." Therefore, claim 15 is also allowable for this additional independent reason and the Applicant respectfully requests that the rejection be withdrawn.

Also, claim 15 is not obvious in view of the combination of Narumiya and Lamb for the additional independent reason that Lamb does not disclose a device for freezing food and, therefore, a person of ordinary skill in the art would not combine Narumiya with Lamb. Lamb's "invention relates to the mechanism by which the [airline and hospital] food trays are kept in a chilled condition from the time they leave the place of preparation until they are removed from the cart." Col. 1, ll.10-12 (emphasis added). This is in contrast to the heat exchange required of freezing food. Lamb, in fact, teaches away from such heat exchange by teaching that the bunker containing dry ice is insulated "[i]n order to prevent the very cold bunker 42 from over-chilling

the trays mounted beneath it." Thus a person of ordinary skill in the art would not combine Narumiya with Lamb. Therefore, Applicant requests that the rejection to claim 15 be withdrawn for this independent reason.

Claims 64-66 and 68-70 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Narumiya in view of Woodruff (US 4,522,835). These claims depend on claims 1 or 17 either directly or through an intermediate claim. As noted above, Narumiya fails to disclose cooling steps which include placing the food in a calorie exchange relationship with circulating air and dry ice in a high calorie exchange cooling unit as presently recited in amended claims 1 and 17 (and therefore a required limitation of claims 64-66 and 68-70). Woodruff, which discloses subjecting "meat, poultry, and fish to an atmosphere containing a low oxygen concentration" (Abstract, emphasis added), fails to remedy the deficiency of Narumiya. Furthermore, Woodruff does not disclose a packing step including de-aeration (claims 64 and 68), a packing step including vacuum bagging (claims 65 and 69), or a packing step including shrink wrapping (claims 66 and 70). In contrast, Woodruff discloses various modified atmospheres and the application of a vacuum. See, e.g., col. 1, ll. 27,33-34, 38, 44-45, 68, and throughout. Woodruff would, in fact, be inoperative if the meat, poultry, and fish were first put through the recited packing steps. Because the combination of Narumiya and Woodruff fails to disclose all elements of the claims and Woodruff would be inoperative (that is, the combination is non-obvious), claims 64-66 and 68-70 are patentable over the combination of Narumiya and Woodruff. Applicant respectfully requests that the rejection to these claims be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that each of the presently pending claims in this application is in condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of claims and to pass this application to issue. If it is determined that a further telephone conference with the undersigned would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event that this response is not timely filed, Applicant hereby petitions for an appropriate extension of time and requests that the corresponding fee be charged to Deposit Account No. 02-2135.

The Commissioner is hereby authorized to charge any fees and to credit any overpayments that may be required by this paper under 37 C.F.R. §§ 1.16 and 1.17 to Deposit Account No. 02-2135.

Respectfully submitted,

By _____

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